Successful Methods

Construction - Road Making - Engineering - Industrial - Mining

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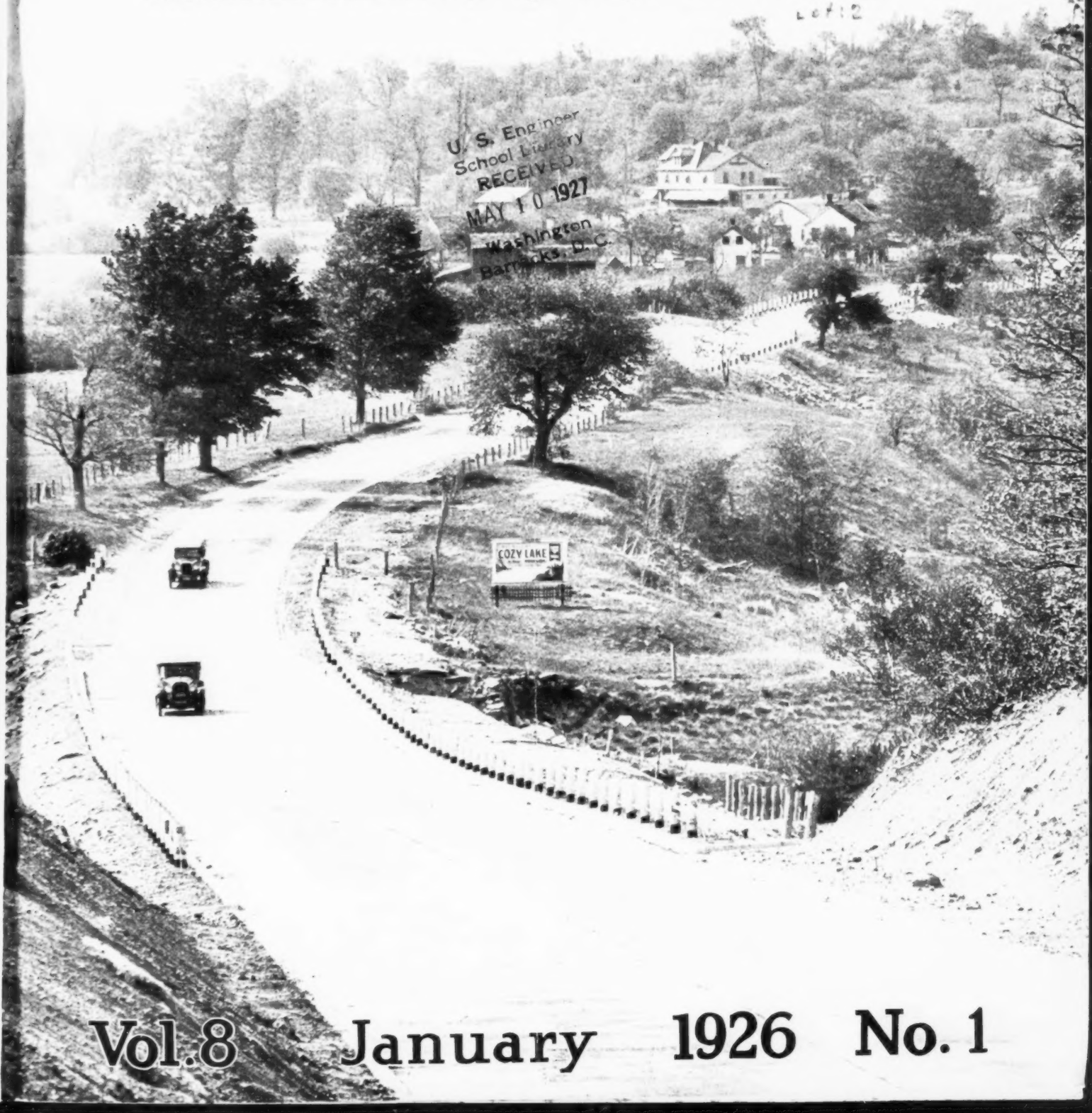
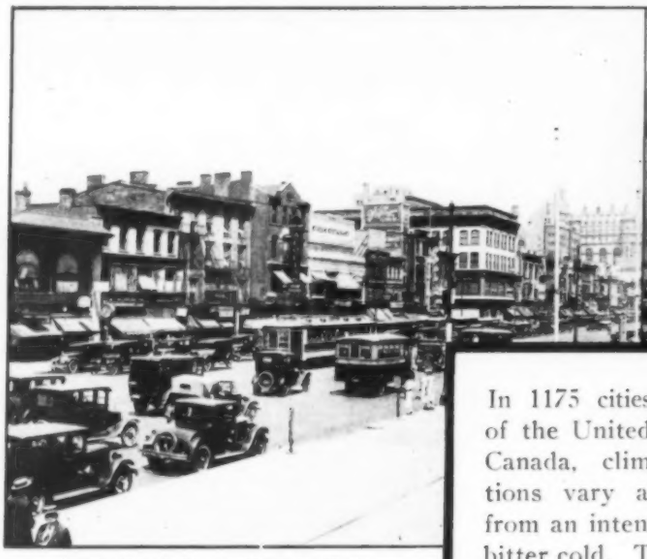
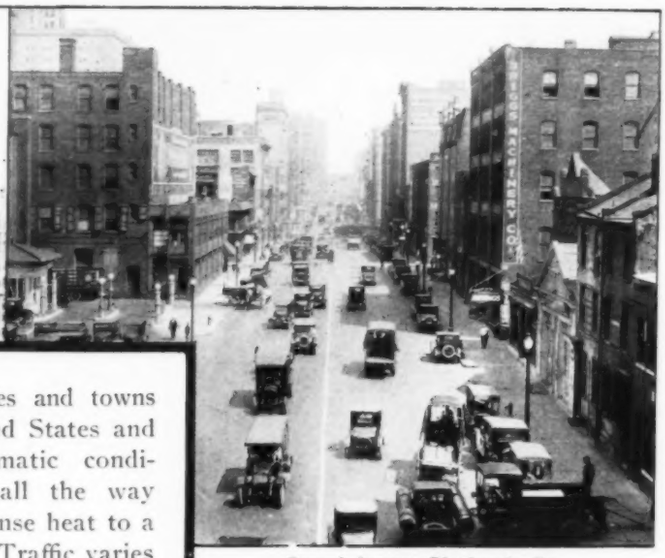


Vol. 8 January 1926 No. 1



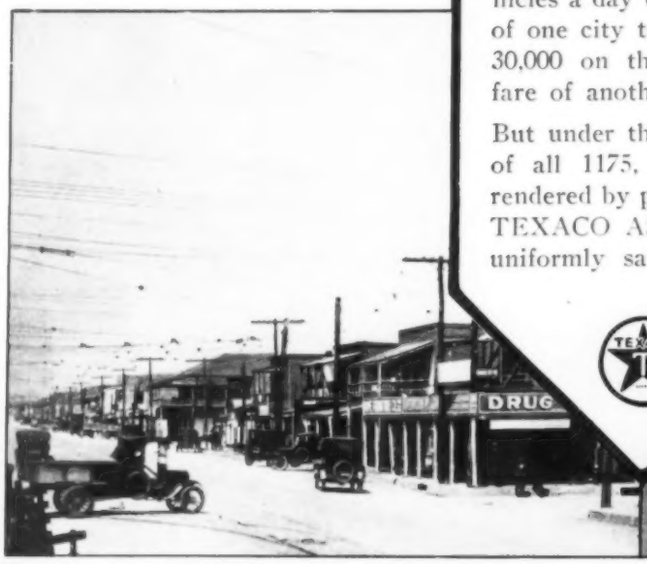
South Broad Street, Newark, N. J.



Second Avenue, Pittsburgh, Pa.

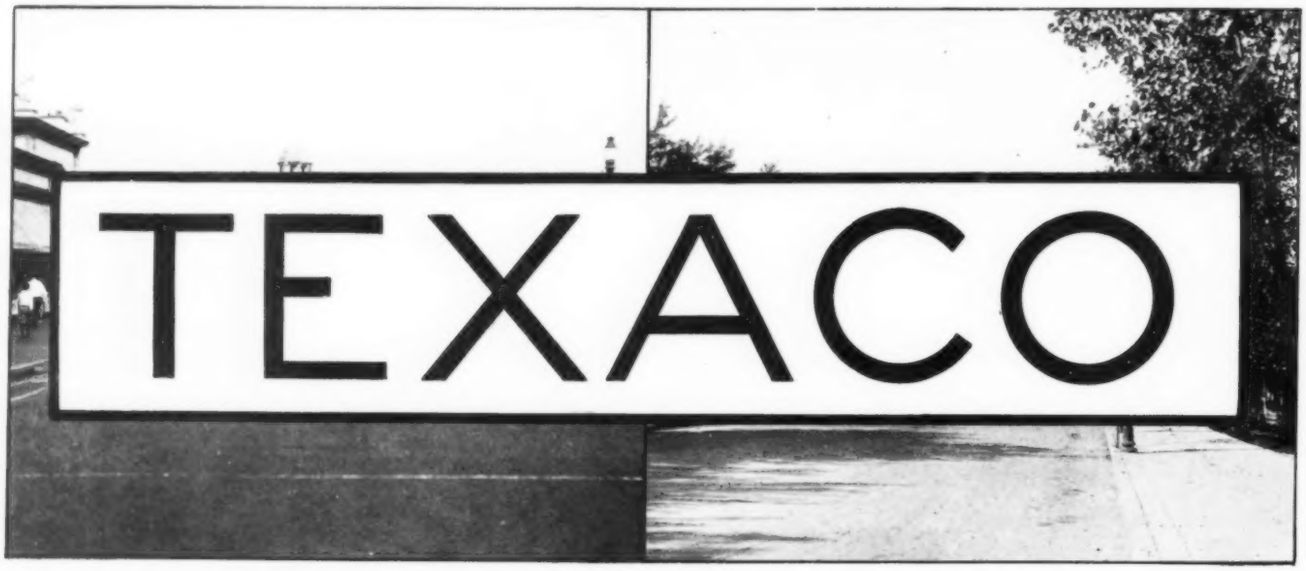
In 1175 cities and towns of the United States and Canada, climatic conditions vary all the way from an intense heat to a bitter cold. Traffic varies from less than 500 vehicles a day on the street of one city to upward of 30,000 on the thoroughfare of another.

But under the conditions of all 1175, the service rendered by pavements of TEXACO ASPHALT is uniformly satisfactory.



Houston Street, Port Arthur, Texas

University Avenue, Toronto, Ont.



Revere Beach Boulevard, Mass.

Main Street, Jonesboro, Ark.

Successful Methods

A Magazine of Construction Service

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S. T. HENRY, President — WILLIAM JABINE, Secretary and Editorial Director
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Vol. 8 — JANUARY, 1926 — No. 1

A Great Institution

THE National Road Show and Convention have become more than events—they have grown into a great institution. This has practically all come about in the last four or five years. Under the able leadership of Wasser, Page, Cranford and Connell, and the capable management of Upham, more has been done than can as yet be measured.

A vast industrial activity now starts its calendar with the two big events at Chicago in January. There men from everywhere and in every phase of highway activity rub elbows. Officials and contractors come in on common ground to study new equipment and improvements in older types. They also have a chance to talk informally about mutual problems.

Manufacturers assemble their sales forces from the four corners of the globe. Crowded into a period of days in Chicago most of the sales conventions of the industry now occur under firing-line conditions.

Until recently the show more or less eclipsed the convention. Attendance at the last two conventions has increased considerably. There also has been more interest in the programs. This year President Connell has worked out a fine series of subjects which are certain to arouse some strenuous discussions. And, after all, it is the discussions which really count. So beginning this year, the convention ought to be a very healthy twin to the show.

Annually there is pressure brought to bear to move the Road Show and Convention from Chicago. Thus far no city near the centers of population has come forward with exhibition space even approaching the needs of the show, or with adequate hotel accomodations. The National Road Show and Convention, will, therefore, evidently become fixtures at Chicago. There they have achieved success beyond the dreams of those who have given so much time and energy. There they have truly risen to institutional standing.

"She Bust"

LAST August one of the best salesmen of a reliable construction machinery manufacturing concern received an urgent long-distance call. At the other end of the line was an irate user of his machinery whose knowledge of English was limited. All the salesman could get, beside a fine line of swearing was "She bust, I say, she bust."

Hurrying out to the job the salesman found a small but important part of the machine had been corroded until it gave way. There was evidence aplenty that the machine had stood out all the previous winter. But the owner was so hot that all the English he could remember was "She bust."

Right now good construction machines are literally scattered all over the landscape wherever one goes. It seems as though there was more neglect than ever before.

Next spring most of this exposed equipment can be started after a lot of grief. Much of it is so well built that it will hold out the season. But many a man who is letting his equipment shift for itself this winter will be bellowing next August "She Bust."

1926

RIGHT now it looks as though 1926 would be a big construction year. All the figures show that more work is in hand and in sight than ever before. There is some slowing up in residential building. But industrial and public works programs are huge.

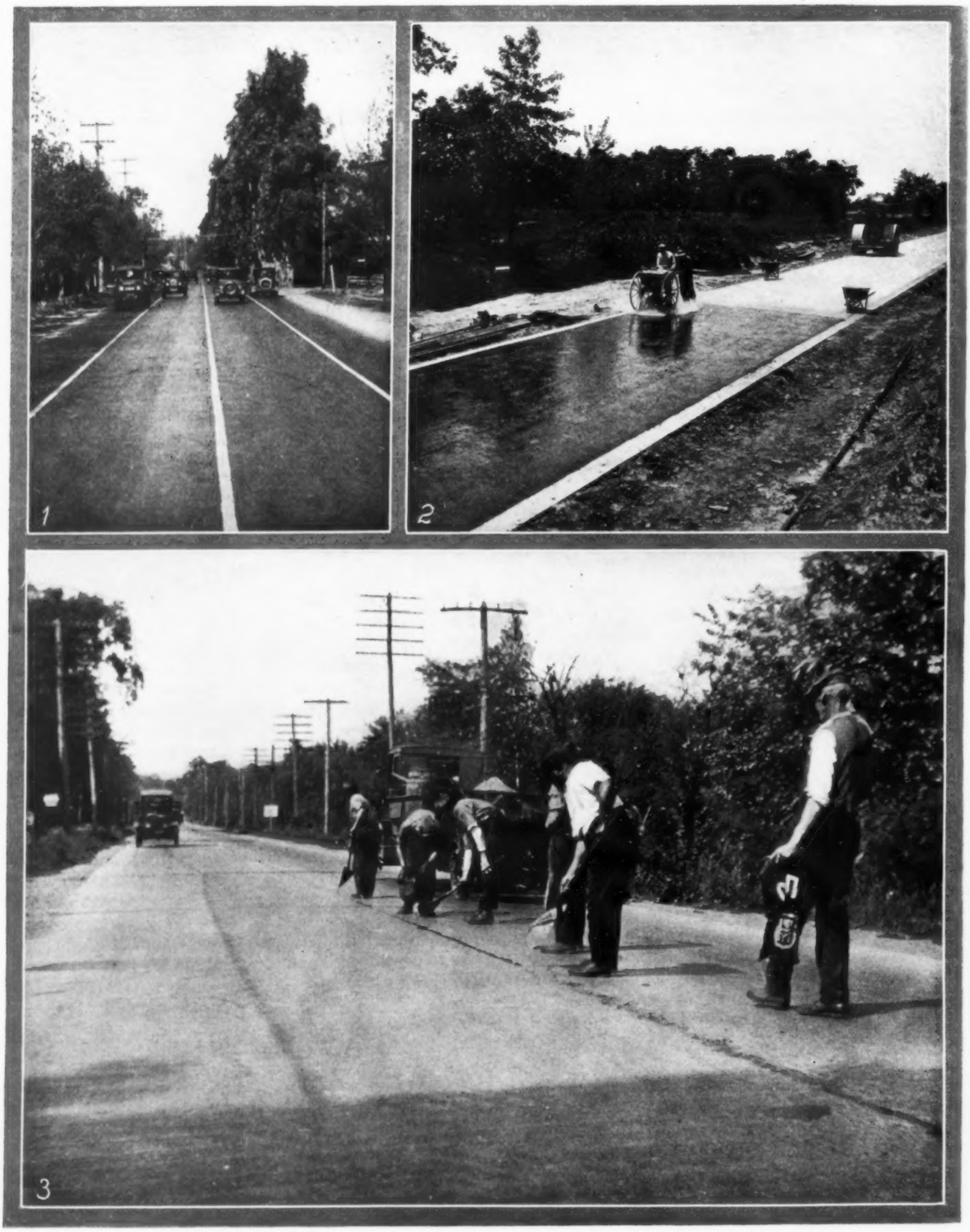
This is a good time, however, for caution. We have had a long upswing. Money has been cheap; interest rates have been low. Lately there has been a hardening tendency. The country's volume of credits has grown beyond the grasp of most of us.

Maybe the pace can hold. It looks as though momentum would carry us quite a distance. When things sail so high and far, though, experience shows it is always wise to look for a place to light. This "cycle" will probably have less downward swing than those which have gone before. One thing certain, overproduction and inflation must be avoided if good times are to continue. Each of us can do his part by taking fewer long chances.

A Word to Our Readers

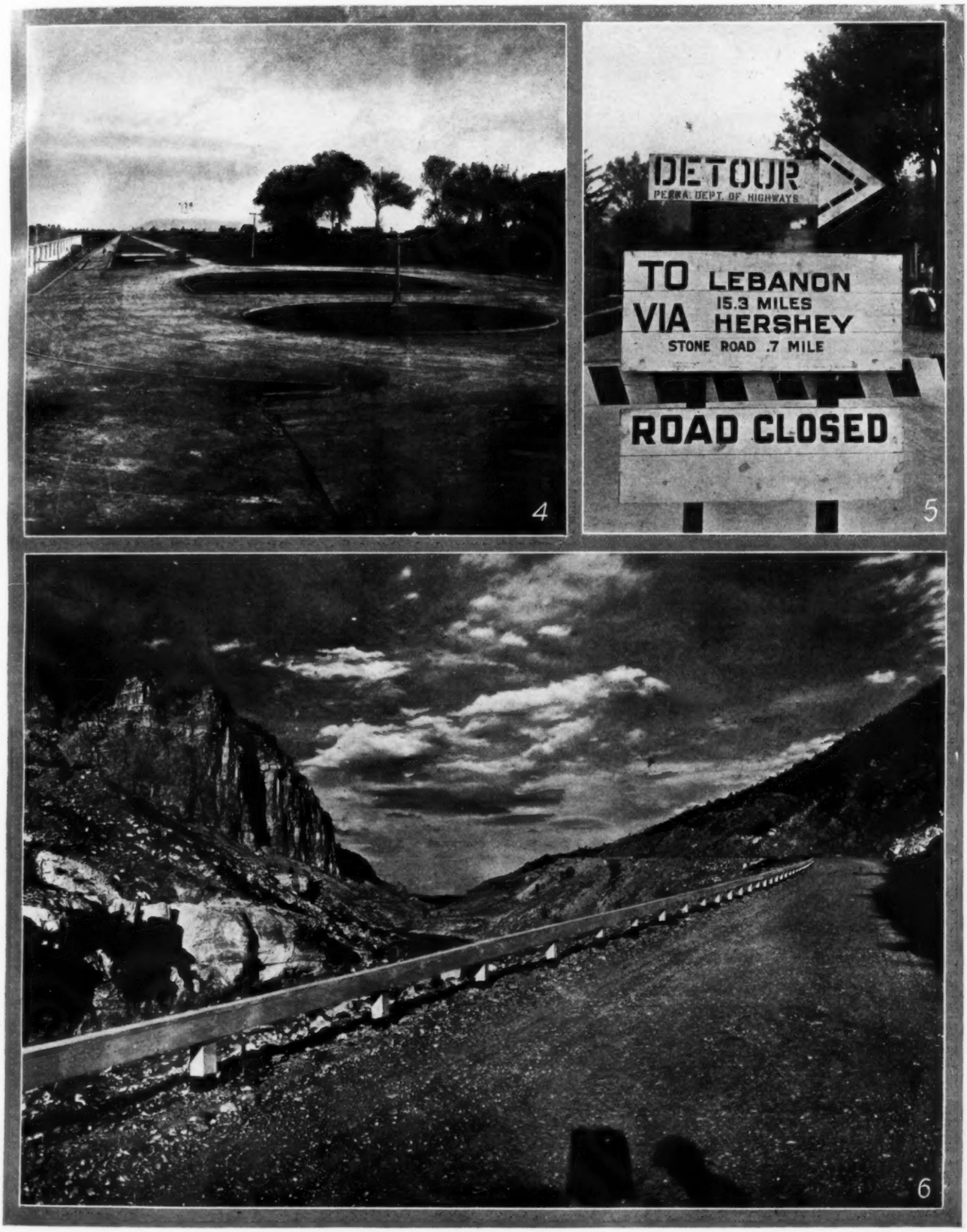
THE columns of SUCCESSFUL METHODS, and especially the space devoted to photographs, always are open to the readers of this magazine. Many of the articles printed in this and previous issues have been contributed by contractors or men identified with contractors' organizations. Articles and photographs sent in by readers always receive careful consideration, as one of the purposes of the magazine is to give its readers a chance to see what their brothers in the construction field are doing.

The Better the Roads



1. Four lanes of traffic have been plainly marked on this road near San Francisco. Slow moving vehicles are expected to keep to the side of the road. *© P & A Photos*
2. The last steps in the surfacing of a bituminous road in North Carolina. *© U. S. Bureau of Public Roads*
3. The maintenance gang at work on a New York State highway.

The Better the World

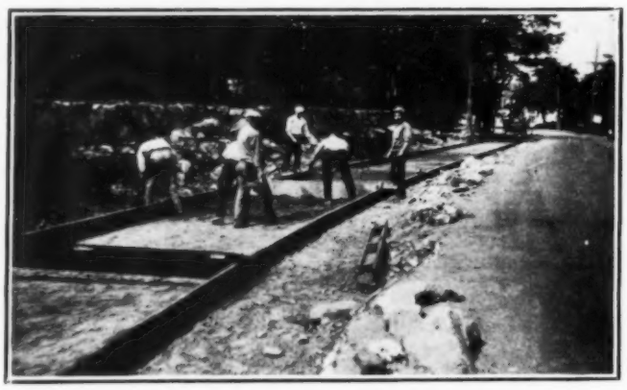


4. One of the splendid boulevards constructed by the Foundation Company in Peru.
5. A Pennsylvania detour sign. These are made large enough so that they can easily be seen and read from a distance.
6. The new Cody road near Yellowstone Park built under the direction of the Wyoming State Highway Department.

REJUVENATING TWO GREAT OLD HIGHWAYS

Boston and Albany Post Roads, Which Have Been Carrying Traffic Since Long Before the Revolution, Are in Midst of Improvement Program

So much has been written in the last few years about the nation-wide building of new roads that the work that is constantly going on to improve the old highways is apt to be overlooked. There is a sort of romance about the pioneer work of building a highway where none has been before that seems to be lacking in a reconstruction job. The formal opening of a new road is celebrated with pomp and ceremony but the only recognition accorded to the completion of work on an old road is the sigh of relief that is heard when the detour signs are removed. Nevertheless, a great part of the country's vast roadbuilding program is devoted to the rebuilding, widening and improvement in other ways of the old highways that have been doing service for many years.



PREPARING THE SUB-GRADE ON THE BOSTON POST ROAD

Two of the most famous highways in America are now in the midst of big reconstruction programs. The old Boston Post Road leading from New York to Boston and the equally famous Albany Post Road which begins at the Battery in New York as Broadway and runs 150 miles to Albany are being widened wherever necessary, bad curves are being eliminated and both roads are being put in shape to handle the immense volume of motor traffic that flows over them every year.

Just how long these two roads have been carrying traffic cannot be told with certainty. The first post road between New York and Boston was established on Jan. 22, 1673 and ever since that time horses, stages, carriages and motor cars have been using the route of the Boston Post Road. Sections of the Albany Post Road have been in use almost as long. Both of the famous old roads have known the tread of Washington's army.

The first official recognition of these two roads as public highways is contained in an account of the Provincial Legislature of New York which, on June 19, 1703, set apart that section of the Boston Post Road which is between New York City and the Connecticut State line and the Albany Post Road from Kingsbridge to Albany as "Publick Comon General Highways of the breadth of 4 rods English measure at the least to be Continued and Remain for ever the Publick Comon General Roads and Highways."

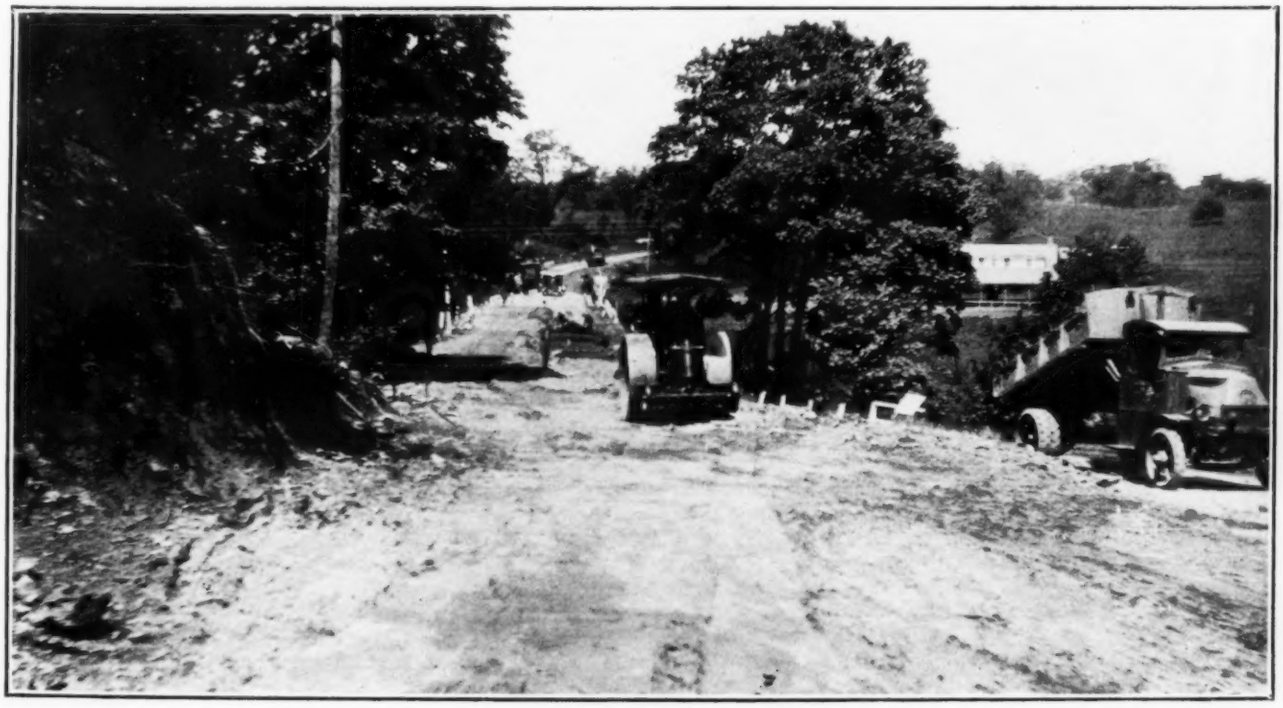
AN INTERSECTION ON THE BOSTON POST ROAD SHOWING VARIOUS STAGES OF NEW WORK

ELIMINATING A BAD CURVE ON THE ALBANY POST ROAD

The general condition of the post roads at that time has been most feelingly described by Mrs. Sarah Knight, a gentlewoman of Boston, who in 1704 made the trip on horseback from Boston to New York in four days and after staying in New York for a few months returned to Boston. After arriving home she wrote on the window glass of her house the following poem:

Through many toils and many frights
I have returned, poor Sarah Knights;
Over great rocks and many stones,
God has preserved from fractured bones.

The photographs which accompany this article give a good idea of the work that is now going on to improve the Boston and Albany Post roads in Westchester County, New York. Similar improvements are under way throughout the entire 50 miles of the Boston Post Road between the Connecticut line and New Haven in the State of Connecticut and the New York State Highway Department is planning to reconstruct and widen much of the Albany Post Road in Putnam and Dutchess counties.



THE NEW GRADE AND ALIGNMENT

In the season just ended a section of the Boston Post Road almost three miles in length through Rye Village was repaved with concrete to a width of 36 ft. The contractor on this job was Petro Luciano of White

OLD ASPHALT BLOCK USED AS BASE FOR WIDENING ROAD

Plains. The specifications provided for the laying of the concrete in four 9-ft. strips and the photograph at the bottom of page 4 shows part of the road with the 9-ft. strip at the extreme right finished and traffic passing over it, the next strip with the concrete in place and still in process of being cured and the third strip graded and ready for the laying of concrete.

The materials for this work were brought by boat to a yard at Milton Point on Long Island Sound and carried to the mixer in batch trucks. The sand, stone and cement all were loaded on the trucks at the yard. The slab is 9 in. thick throughout and is reinforced by ⅜ by ½ in. par mats. The laying of the road in four strips makes three longitudinal joints necessary and the horizontal joints are placed 40 ft. apart. This job was extremely well organized and Mr. Luciano averaged about

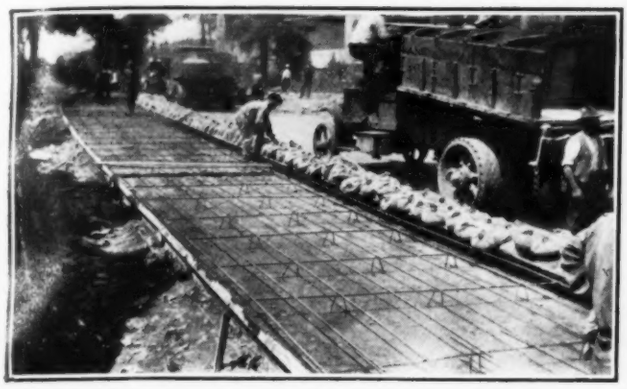
PICKING UP OLD CONCRETE WITH STEAM SHOVEL

1000 ft. of 9 ft. pavement per day. The longest day's run was about 1180 ft. Altogether about 61,020 yd. of concrete were poured. The specifications also called for a curb at the sides of the road which was poured with a small mixer.

The Albany Post Road job between Croton and Peekskill which is nearly five miles in length, will not be finished until next season although excellent progress was made during the season just ended. The Yonkers Contracting Company handled the work. A good deal of changing of grade and elimination of curves also were included in this contract. The two photographs on page 5 show how the curve at Crugers, where the highway crosses the New York Central Railroad, has been straightened. The upper photographs show the road just as the grading operations were begun. The lower photograph shows the line of the new highway with the bridge over the railroad in the background. The Mack truck at the right of the lower photograph is standing on the old concrete road.

The first work in connection with this job consisted in

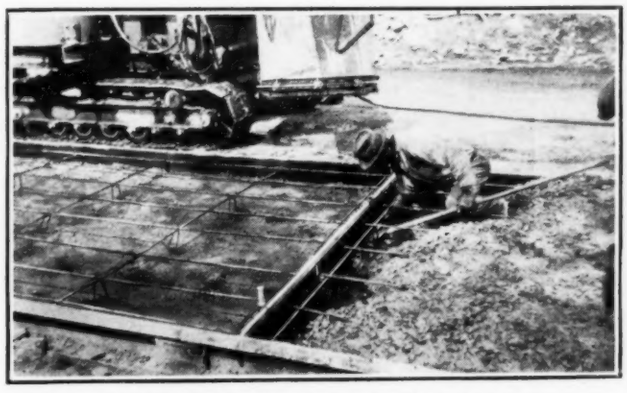
FINISHING ONE-HALF OF ALBANY POST ROAD WITH OTHER HALF OPEN TO TRAFFIC



REINFORCEMENT IN PLACE ON ALBANY ROAD

removing the old 16-ft. concrete pavement which was laid in 1913. The method used in lifting these slabs with a steam shovel is shown in one of the photographs on page 6.

The width of the new section of the Albany Road varies from 27 to 30 ft. and the concrete is 8 in. in thickness with ½-in. reinforced bars set 2 in. from the surface. A Lakewood finishing machine was used on this job as is shown in the large photograph on page 6.



REINFORCEMENT ON BOSTON ROAD

The photographs which illustrate this article were taken by John Avery, Field Engineer of the Portland Cement Association.

WIDENING AN OLD BRITISH BRIDGE

NEWLANDS BRIDGE which is one of the main roads in the Lake district of England, is being widened in order to care for the greatly increased traffic. Public opinion has insisted that the appearance of the old bridge be maintained and that the new masonry correspond to the masonry in the old walls nearby.

THE NEW PART OF THIS ENGLISH BRIDGE IS BEING BUILT TO MATCH THE OLD STRUCTURE

PRODUCING SILICA SAND

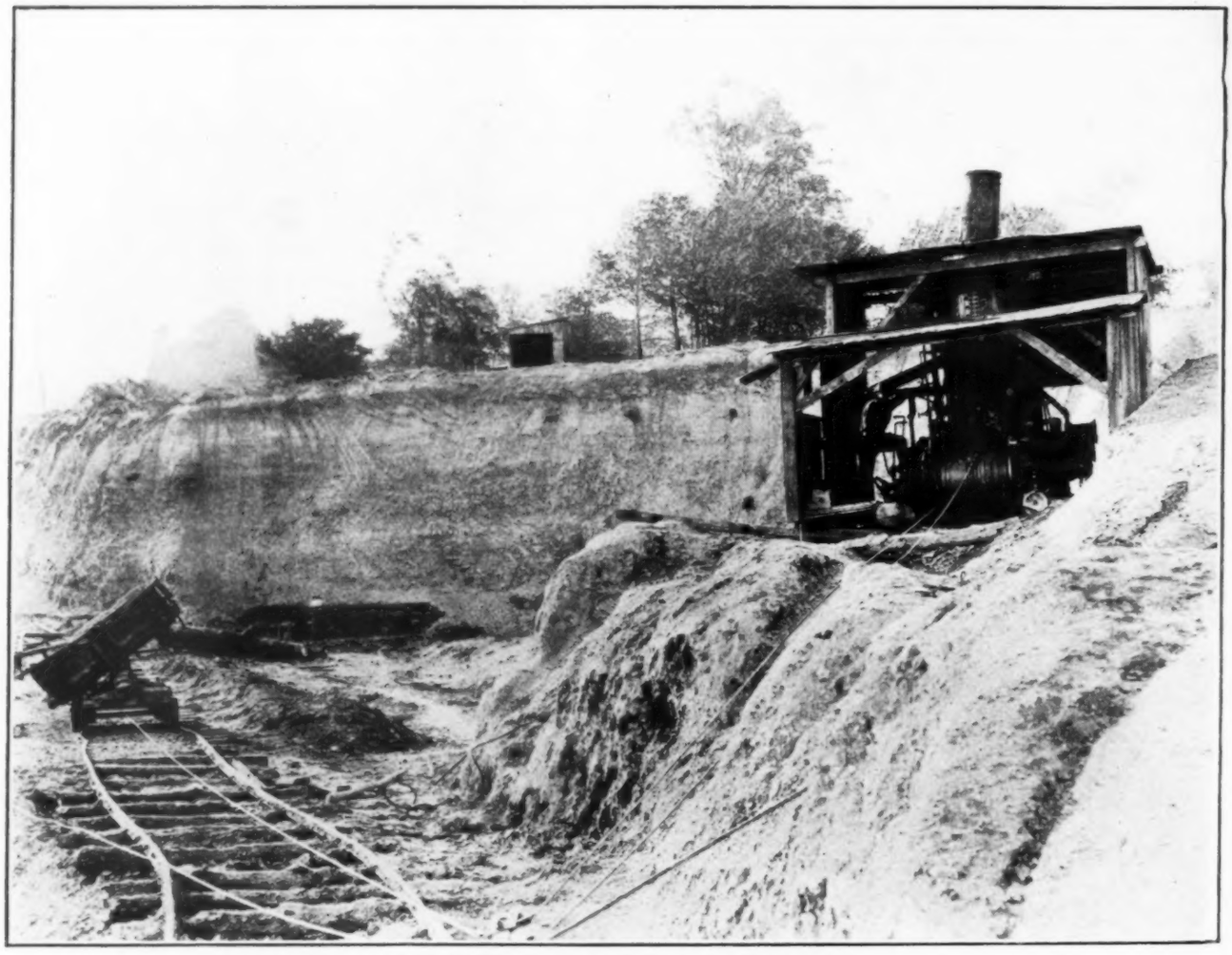
Economical Operation of Pit Assured by Uncovering of Vein of Coal During Stripping Operation

THE production of silica sand which is used in glass factories and in foundries is one of the important industries of that section of the Illinois Valley near the famous meeting place of the Indians known as "Starved Rock." About thirty silica sand pits are operated in the neighborhood and one of the best equipped plants is that owned and run by the Illinois Valley Silica Company of Ottawa, Ill.

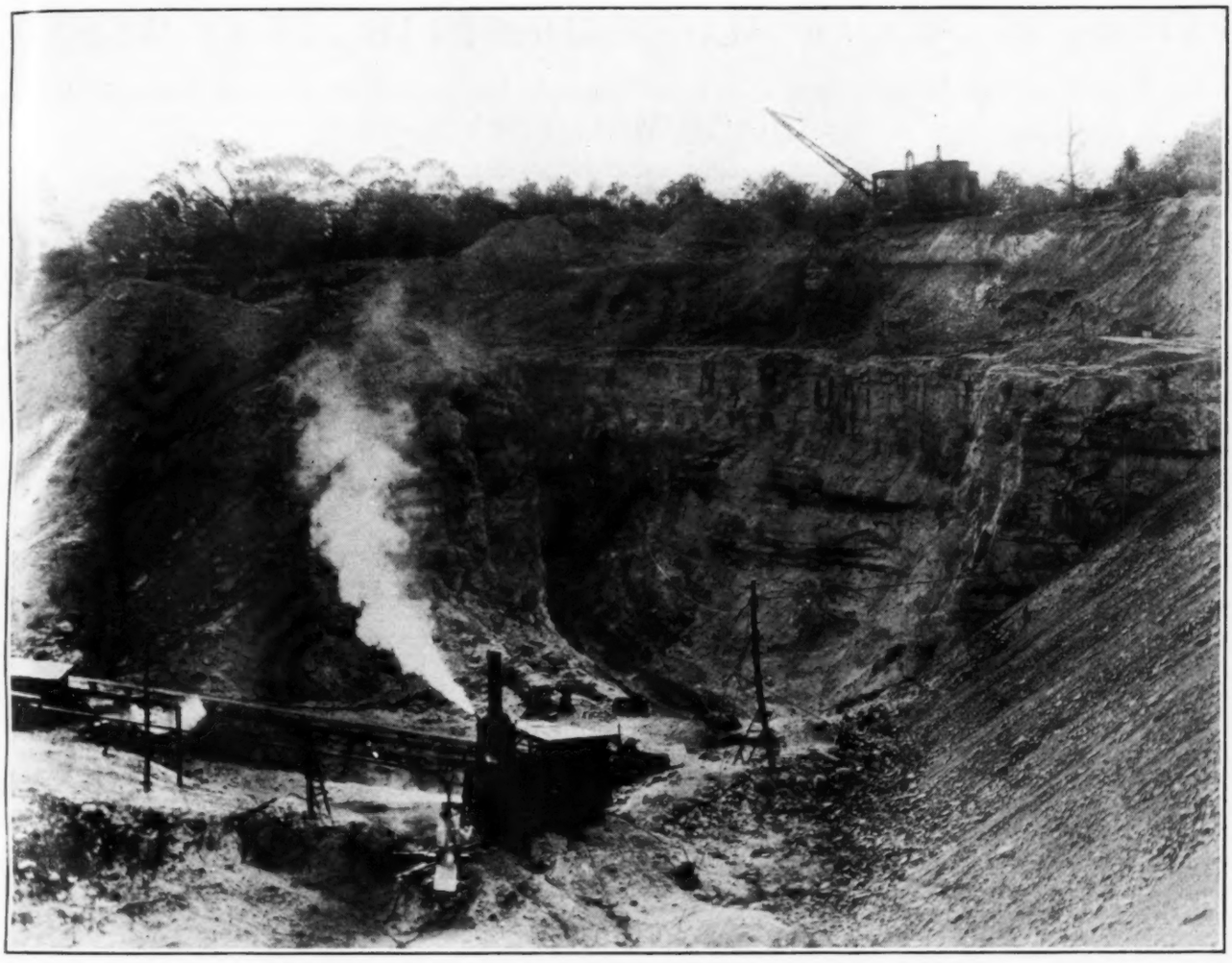
The sand obtained is of the very best grade of silica. The analysis is Silica 98.1, Alumina 1.5, Oxide of Iron .3, with very slight traces of Calcium Oxide. Shipment is facilitated by direct connection with the Rock Island Railroad. Sand is shipped to all parts of the United States and also to foreign countries. Clyde hoisting engines are used in this pit and have operated with entire satisfaction for the long time they have been in use. A Clyde compound geared-double drum steam engine, 7 by 10, size, operates a drag-line bucket on a 40 ft. boom mounted on a full circle revolving platform. This dragline bucket does the stripping of the top layer of earth and then dumps it into cars which in turn are hauled away by a Clyde three drum 9 by 10 steam hoist and dumped into an abandoned pit.

A one and one-half yard bottomless scraper drags the sand from the pit to a grate. The sand passing through this grate falls on a belt conveyor and is relayed by a second belt conveyor to the hopper. It then goes through a screen 48 in. by 120 in. with ½ in. square holes. The oversize from this screen is emptied into a 12 by 24 jaw crusher which is set at an opening of 2 in. From there it drops to a set of rolls directly underneath which are spaced ¼ in. apart. All of the sand from the screen and rolls falls on a belt conveyor which empties material into railroad cars on the siding. These cars are spotted by a 7 by 10 steam hoist.

A central steam plant supplies steam for all of the steam equipment on the job which includes, besides the four hoists, a 50 hp. engine which operates screen, crusher and rolls; a steam driven air compressor which furnished 160 cu. ft. of air per minute, and operates



THE HOIST WHICH OPERATES DRAGLINE



A GENERAL VIEW OF THE PIT, SHOWING HOIST AND BELT CONVEYOR

two Ingersoll-Rand Jackhamer rock drills; also a steam powered water pump, which pumps the water for the plant from the Illinois and Michigan Canal to a reservoir of considerable capacity.

This pit is completely equipped and is one of the most modern of its kind. The average output a day runs about 18 to 20 railroad cars, but this is not the maximum. The work is under the direct supervision of D. J. Warsaw who is President and General Manager of the company. He is assisted by Chas. Ingham, the superintendent, who has been connected with this type of work for many years. H. H. Warsaw is secretary and treasurer in charge of the office.

In the stripping operation a vein of coal several feet in depth was uncovered so that the company is mining not only sand, but also bituminous coal. There is a sufficient quantity of coal to supply the fuel for all the equipment used and leave a considerable amount for sale to the neighbors. This opportune discovery entirely eliminated the usual fuel problems.

NEW JERSEY ROAD GETS ON THE FRONT COVER

THE photograph which was selected for the cover of this issue of SUCCESSFUL METHODS was taken in Morris County, New Jersey, and shows a section of state highway No. 8, near Charlotteburg. This road is a typical example of the concrete highways that the State of New Jersey has been building in the last few years. That section of the road which is on the hill has been widened and curbs added. This practice of extending the road to a width of 30 ft. on steep grades is now in general use in New Jersey. It eliminates shoulder maintenance, provides for adequate drainage and furnishes an additional safeguard to traffic.

Most of the new bridges which are now being built on the New Jersey State highways are wider than the road on each side of them, so that if in the future it becomes necessary to widen the pavement there will be no need to rebuild the bridges.

[The cover photograph is copyrighted by the Keystone View Company, Inc., of New York.]

CRANE IS JACK OF ALL TRADES IN HIGHWAY WORK

Handles Various Jobs Efficiently and Travels Under Own Power from One to the Other at Motor Truck Speed

HIGHWAY construction and maintenance presents so many varied problems and these problems crop up at so many points along the route that a piece of equipment which can move quickly from one point to another is almost invaluable. When a machine can handle an unloading job at the material yard on one day, go 5 or 6 miles the next day to place pipe in a culvert and on the way back to the yard do a little excavating at a point where the use of a big shovel would be too expensive, it more than earns its way.

DIGGING ROADSIDE DITCHES IN MICHIGAN

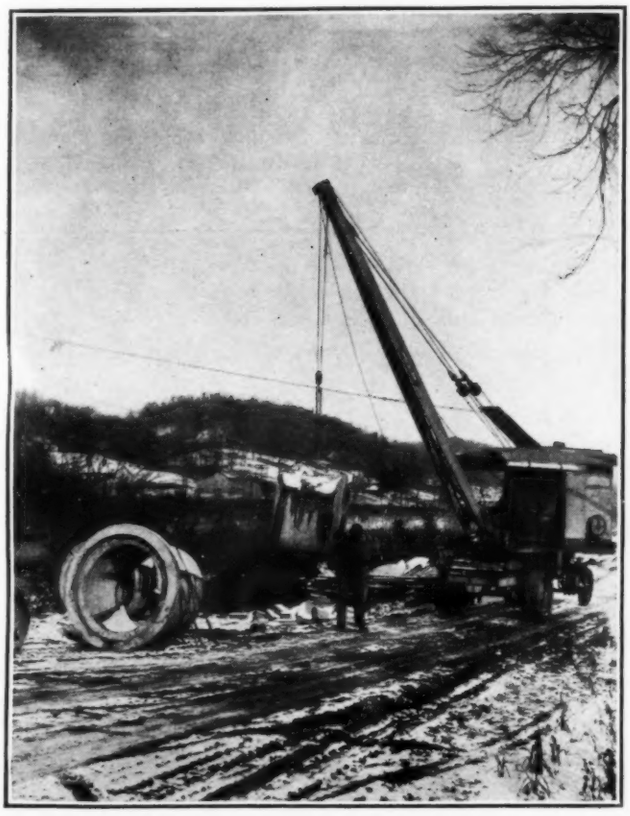
During the road construction season that has just ended Universal cranes have been at work in every section of the country and by their versatility have more than proved their worth in highway work. Various road jobs on which they have been used about the country show their application and all round ability. At Elkhart, Ind., for example, a Universal made a 30-in. cut the full width of a 30-ft. street and left a smooth subgrade. More than 300 yd. of materials were moved by the crane the first day on this job.

On the West Coast the Western Crane Service Company unloaded the rock and sand for the 78-ft. wide Washington Boulevard cutoff. Because of the mobility of the Universal, cars were unloaded at the siding nearest the job, never more than ¼ mile away, which cut down the haul, the number of trucks necessary and the

UNLOADING AGGREGATES FROM CARS ON A NEW YORK JOB

cartage costs. Another contractor in the same vicinity had his materials delivered from the nearest material yard, which was several miles away, at a cost of 60 cents a ton more for cartage than for those the Universal delivered. On this job the Universal unloaded eight 58-ton cars in 7½ hours and required only three 5-ton dump trucks to deliver the material on the grade. This was because of the fast loading and the short haul.

In New York State Charles Shaver put his Universal in a gravel pit and dug out 396 yd. in 9 hours and kept his 5-ton Mack truck busy on a 5-mile haul. On another job at Ripley, N. Y., a 20-ft. bin was charged using the setup shown in the accompanying photographs. The bin was equipped with a batch measuring box and delivered enough material for an average of 1000 lin ft. of 9-ft. concrete road per day. One day as much as 1400 ft. was laid. The crane



PLACING CONCRETE PIPE IN A CULVERT ON A ROAD IN SOUTHERN OHIO

handled an average of 300 to 400 tons daily from cars and stock piles into the bin.

On a job in Macomb County, Michigan, a Universal crane equipped with backfiller was used to build berms and ditches. The ground was first ploughed out to the ditch line and the backfiller used to scrape the loose material up to the edge of the pavement, building the ditch and berm simultaneously. They averaged 20 ft. a min. and it was estimated 1½ to 2 miles could be finished per day, if the crane was not occasionally moved from the job to do culvert work, car unloading, etc. The work the crane is doing was formerly done by 6 teams and 12 men, which shows a great saving to the county.

The State of Ohio has 10 Universal cranes and sometimes uses them for building concrete culverts. The culverts are cleared out and additional excava-

ANOTHER VIEW OF THE SAME CRANE WHICH IS OWNED BY THE OHIO HIGHWAY DEPARTMENT

tion made by the crane using a ½-yd. clamshell bucket. The culvert tile is handled on the job by the crane, using hoist block. One crane will average three culverts a day. This includes the moving of the crane at truck speed from one job to another, unloading of tile and also the laying of fourteen 48-in. concrete culvert tile to an average depth of 15 ft. This tile weighs 4400 lb. per section and often the crane is required to move several feet with one tile suspended over the rear end of the truck before placing it in position in the culvert.

ROAD BUILDERS ARE IN THE LIMELIGHT

IF this issue of SUCCESSFUL METHODS seems to devote too much space to the building of highways to the exclusion of articles describing work in other branches of the great construction industry, the Annual Convention and Road Show of the American Road Builders' Association must bear the blame. That organization, which has been identified with the nation's highway program for more than a score of years, has made road building the prevailing subject of discussion in the construction industry at this time of the year.

ROAD BUILDING THROUGH ROUGH COUNTRY

Gasoline Shovel Handles Excavation on Eight-Mile Job in West Virginia

ROAD construction in West Virginia always presents difficulties because of the rugged character of the country. The highway now being built between Ripley and Sandyville 8 miles in length, is a typical example of the kind of work encountered. The contract was let last spring and the new concrete road will not be ready for another year.

Excavation for the Ripley-Sandyville road, which is a Federal Aid project, has been going on since last May, the contractors being Bozo and Richey of Ravenswood, W. Va. They have been using a ¾-yd. Thew gasoline shovel on the job, and the photographs on this page show the machine in action. Most of the digging is done through red clay, but at many points rock has been encountered. The estimated volume of material to be removed is 180,000 cu. yd.

HANDLING ROCK ON A SIDE HILL CUT

During the early months the contractors worked only one shift a

ENOUGH WAGONS WERE ON THE JOB TO KEEP THE SHOVEL CONTINUALLY BUSY

day, but during the latter part of the season they kept the shovel going for two shifts. The grading is in the main cut and fill with a fair amount of side casting. As may be seen in the lower photograph, the material that has to be hauled from the shovel is taken away in horse-drawn dump wagons as the nature of the ground over which the material has to be carried makes the use of motor trucks impracticable.

Since the very start of the job the work has proceeded at a rate that is decidedly unsual in West Virginia. During the month of May working a day shift of 10 hours 16,000 cu. yd. were handled. By the end of October 6½ miles of rough grading had been completed and 122,000 yd. of clay and stone had been removed. The lower photograph shows the shovel at work in one of the easier sections of the new road and the upper photograph gives a good idea of the work that had to be handled in the more difficult places.

HEAVY MOTOR GRADER PROVES USEFUL FOR BOTH MAINTENANCE AND RECONSTRUCTION OF HIGHWAYS

THE dividing line between highway reconstruction and highway maintenance is hard to draw, but one way to define it is in terms of power. There are plenty of light machines engaged in maintenance work throughout the country which lack the power to be efficient in highway reconstruction.

At a recent test held by the Minnesota Highway Department the Austin 15/30 motor grader shown in the photograph which accompanies this article proved its worth as a reconstruction machine as well as a maintenance unit. In the course of this test it developed sufficient power to cut right down to the bottoms of the corrugations of a wornout gravel road. Instead of simply knocking off the high spots, the blade of the 15/30 grader cut a new smooth surface and distributed the loosened material even.

This test also was undertaken with a view to using motor graders of this sort during the coming winter for snow removal. They are expected to be of considerable aid in keeping the highways open to traffic.

WORKING THE ROUGH SPOTS OUT OF A GRAVEL ROAD

SUNDAY SPECIAL SPEEDS PAVING JOB

California Contractor Borrows Two Street Excavators and Makes Good Use of Sabbath

By C. P. Burton

An interesting story comes from California of how a new machine, which is being shown this month at the Road Show in Chicago for the first time, broke the Sabbath day and the records for street excavation in Los Angeles, a city famous for its ability to do things. Visitors at the Road Show will be interested in seeing the machine and moving pictures of its operation.

Frye Bros., well-known contractors on the Pacific Coast, were hurrying to complete a paving job at Santa Ana, and it became necessary to excavate four city blocks in quick time. There was not time to wait for the laborious process of hand-shoveling, usually necessary in the narrow and congested streets of a city, but over in Los Angeles, 40 miles away, two machines of a new type known as the Western Street Excavator were being tested out in actual construction work under contract.

This machine is, roughly speaking, an end-loading elevating grader, designed for the excavation of narrow streets without interfering with traffic. It has some of the principles of the elevating grader, but delivers the material forward into the truck which is pulling it. As the machine is narrower than the truck, it is able to operate wherever the truck can be moved, even in streets as narrow as 14 feet between curbs.

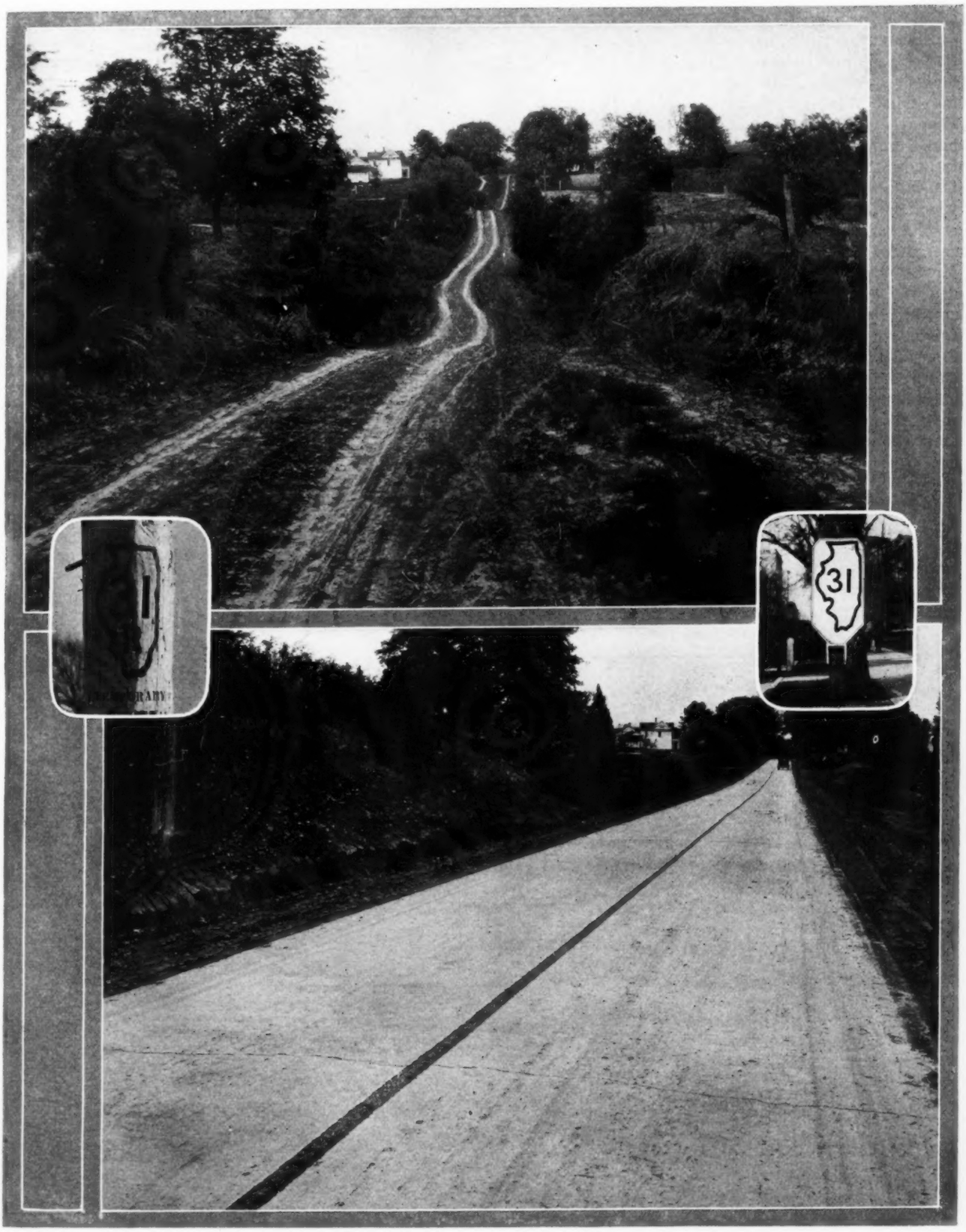
Frye Bros. in Santa Ana endeavored to have the Los Angeles work halted long enough to borrow the machines. As the street authorities in Los Angeles also were in a hurry, the request had to be refused. Frye Bros. then suggested that Sunday by utilized for their emergency work, and the men operating the machines consented.

As the homes of two of the truck drivers were at Long Beach, half way to Santa Ana, each driver took a machine home with him Saturday night, trailing behind his motor truck, and early Sunday morning went on to Santa Ana with the outfit. Within five minutes after the outfits arrived on the streets to be excavated two truck loads of dirt were on the way to the dump. All that was necessary on reaching the street was for the machine operator to put down his plow, whereupon the truck pulling the machine began to take on its load. The excavation was completed in short order. At 4 o'clock in the afternoon the men were back at their homes in Long Beach, and at 7 o'clock Monday morning were on the job again in Los Angeles.

The Los Angeles job involved the excavation of Park Avenue, two miles south from Slosson Street, some of the cuts being three feet deep. More than two hundred 5-yard loads were often taken out in a day. The maximum day's work was 210 truck loads for one machine and 212 for the other, the average being 180.

EXCAVATOR HARD AT WORK PREPARING STREET FOR PAVING

Making the Crooked Straight

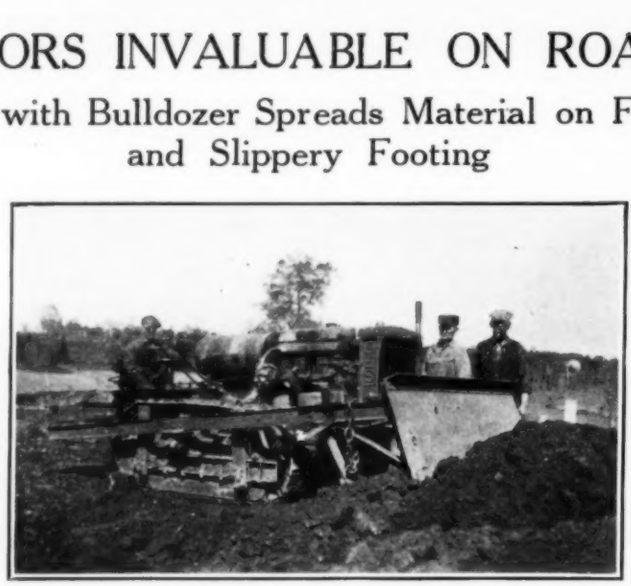


These two photographs of an Illinois road tell their own story. They show a section of Route 31 as it looked before the State Highway Department took hold of it and as it is now.

TRACTORS INVALUABLE ON ROAD JOB

Machine Equipped with Bulldozer Spreads Material on Fill Despite Insecure and Slippery Footing

THE record which David Schoentag of Saugerties, N. Y. has made in highway building both in his home State and in Pennsylvania where he has had a number of big contracts in the last few years is such that the methods which he uses always are of interest. On a 12½-mile section of highway which Mr. Schoentag now has under way between Towanda and Troy in northern Pennsylvania he has been using Caterpillar tractors for hauling away excavated material and also for spreading the loose material on fills. The main portion of the job consists of relocation over rough country and involves 42,000 yd. of unclassified excavation and 32,000 yd. of borrow for a heavy fill across a narrow valley and for bridge approaches across a creek.



CATERPILLAR THIRTY, EQUIPPED WITH BULLDOZER, SPREADING LOOSE MATERIAL

The job is being handled in three sections, in each of which a complete working unit has been operating. In the first section, the work consisted of hauling borrowed earth excavated by a 1⅛-yd. gasoline shovel. On this job the hauling equipment consisted of one Caterpillar Sixty tractor with two 5-yd. all-steel wagons, one Thirty with one 5-yd. all-steel wagon, and several smaller tractors with 1½-yd. wooden dump wagons.

The work on the second section was entirely on hillside cuts. Springs had been encountered there that could not be drained and so left sections of the work that seemed bottomless quagmire. To have continued work under such conditions, if dependence had been placed on animal power, would have been impossible. But with Caterpillar tractors on the job, the work continued without a halt, regardless of weather, regardless of footing. One Sixty, hauling a 5-yd. wagon and one Thirty with a 2½-yd. wagon, kept the shovel busy all the time, an emptied trailer always waiting to be pulled into place by the time the other one was filled.

On the third section of the road, the grading was practically all borrow, and at this point a Thirty tractor with an 8-ft. blade was kept busy preparing roadways, moving logs and doing other odd jobs preparatory for the main power shovel gangs.

Where the work consisted of fills, a Thirty Caterpillar equipped with a Bulldozer achieved remarkable results.

TRACTORS AND FIVE-YARD WAGONS KEEP THE SHOVEL BUSY

Among contractors in Pennsylvania, there had been considerable discussion relative to the possibility of using a Bulldozer on road work, because of the fact that Pennsylvania's specifications require that an 8-in. layer of earth must be spread, all fills being brought up from the bottom, the grass and all vegetation being removed before the fill is started.

The success of the Bulldozer-equipped Thirty in this difficult work is an example of the value of a combination of good equipment and good workmen. Without good equipment the skill of the workmen would be of little avail. And without competent handling, the equipment would not have been employed effectively.

The success of the Bulldozer work lies largely in the fact that the grade is kept absolutely to level without allowing the work to pile up at any time. When the Sixty comes down with two 5-yd. dump wagons, heaped up, dumping at least 12 yd. of loose fill, the Thirty brings up the Bulldozer immediately behind, so that by the time the wagons are turned around and started back for the shovel, the ground is leveled off so that an automobile can be driven over it at fair speed without any discomfort. As a matter of fact, the portion of the road where the Bulldozer was operating was actually kept open for local traffic all the time that the work was in progress.

TACOMA BUILT THE CUSHMAN DAM

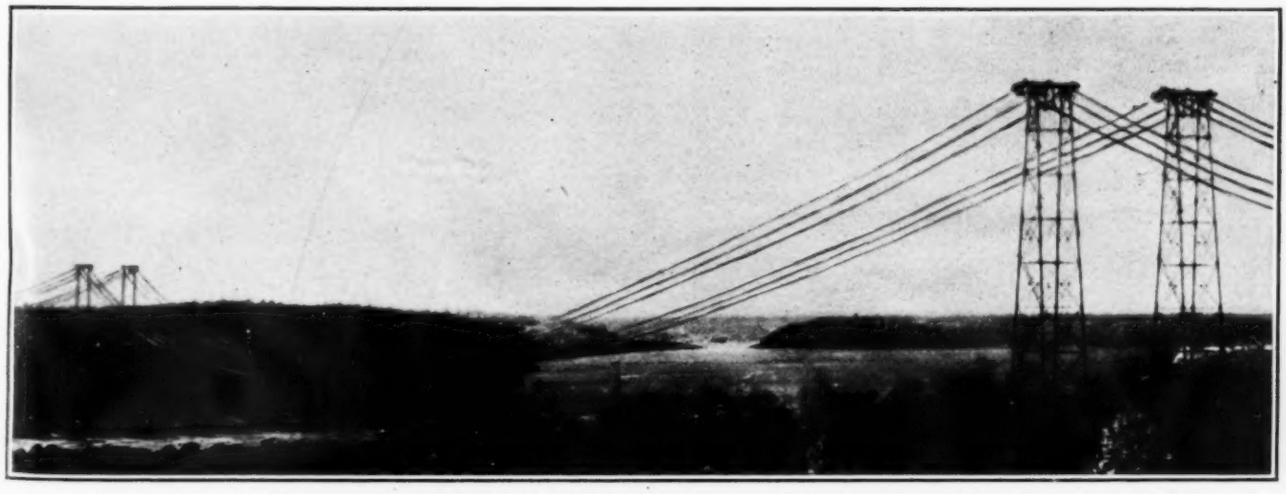
Misleading Caption in Last Issue of This Magazine Gave Seattle Credit for Neighboring City's Work

THIS magazine makes mistakes every now and then, some of which go unnoticed and others of which seem to be very much noticed. In the December issue on page 3 appeared a picture of the Cushman Dam with a caption under it which stated that the dam was near Seattle, Wash. As soon as copies of the December issue reached the Pacific Coast, the City of Tacoma began to make itself heard. Telegrams and letters have been received, all of which state most emphatically that the Cushman Dam is being built by the City of Tacoma, Washington, at a cost of $5,000,000. SUCCESSFUL METHODS regrets very much the error which occurred and takes this method of apologizing to the citizens of Tacoma.

It is a pity that space does not permit the publication of all the letters that were received. The statement to which practically all of the writers of these letters take violent exception is the fact that the Cushman Dam is "near Seattle." Every letter points out very plainly the dam is at least 40 miles nearer to Tacoma than it is to Seattle, and one reader goes so far as to address his letter to "Successful Methods, New York, near Philadelphia." One of the telegrams announces that 135,000 Tacomans protest against the mistake. There is at least a crumb of comfort in the realization that this magazine is so eagerly and attentively read in the great Northwest one of the most progressive regions in the United States.

The picture below is one of the fruits of the error as it was sent by one of the magazine's Tacoma readers and shows how the power from the new dam is being carried across the Narrows, an arm of Puget Sound. The towers which carry the six cables are 320 ft. in height and stand on hills 329 ft. above the water. The length of the span is 1¼ miles.

As may be seen from the photograph there are six power cables. A sag of 400 ft. is allowed for in the long span, which keeps the cables 250 ft. above the water thus allowing ample clearance for ships of every sort. It is expected that Tacoma will begin to receive power from its new dam by the middle of next month.



CABLE LINE FROM CUSHMAN DAM TO TACOMA CROSSING THE NARROWS, AN ARM OF PUGET SOUND

TWO-WHEEL COMPRESSOR MOUNTING FOR HILLY COUNTRY

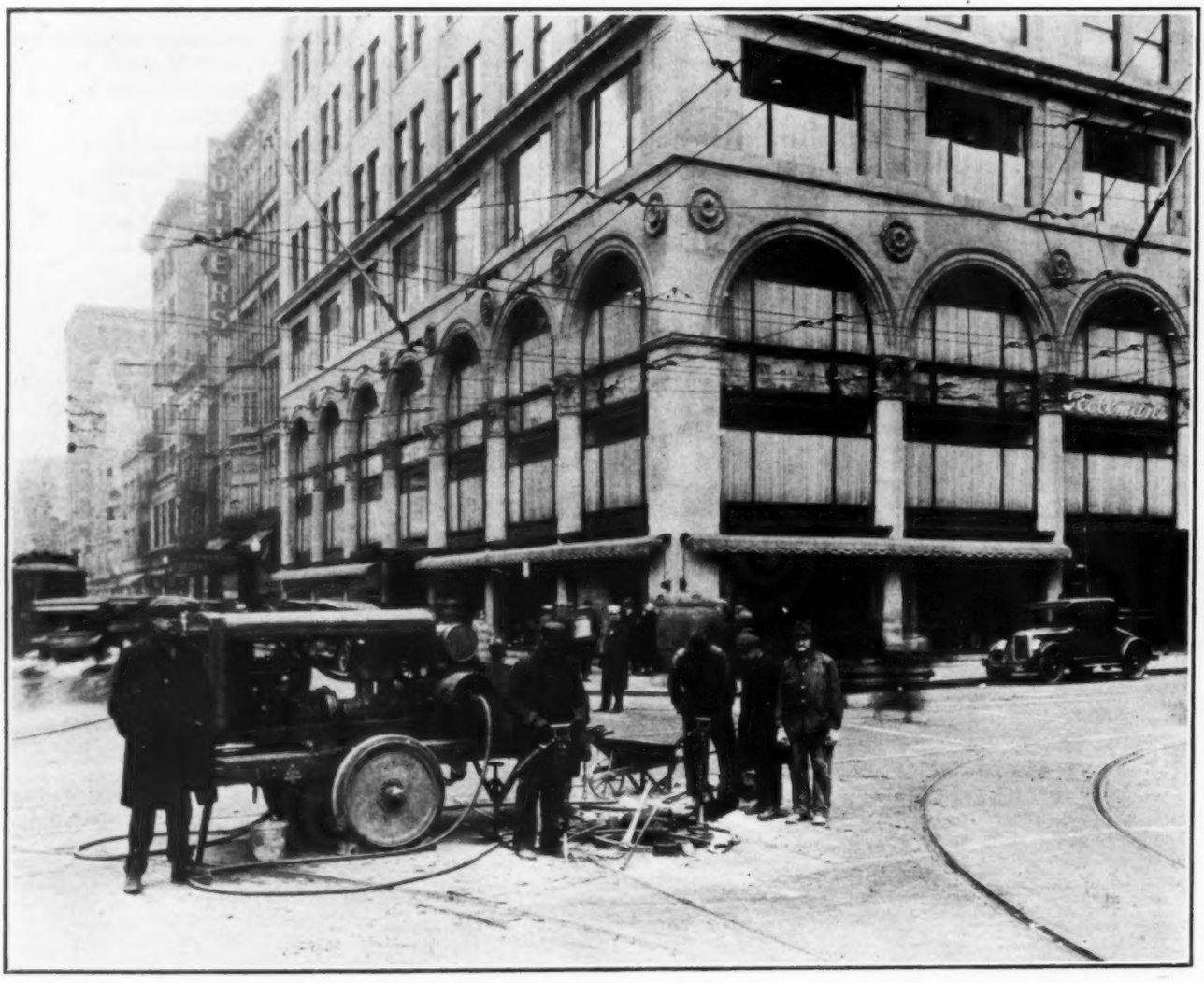
Gas Company in Cincinnati Uses Trailer Device to Keep Machine Level on Steep Grades

THE average public utility company, though much maligned, does not allow adverse working conditions to interfere with the service which its patrons expect. Many and ingenious, however, are the devices called upon to help maintain this service.

For a long time, a Cincinnati gas and electric company operated under difficulties because of the very hilly character of the city. While working along steep hills, it was found impossible to keep the portable compressor equipment on even an approximately level plane. In attempting to offset this difficulty, the company's engineers hit upon the plan of mounting an Ingersoll-Rand 5 by 5 portable compressor on a special two-wheel highway trailer. The arrangement proved a success, and a second was ordered shortly afterward.

BREAKING THROUGH ON A COLD DAY

The photograph at the bottom of this page shows the hand wheel and feed screw device which enabled the workmen to level the compressors on even the



TWO-WHEEL MOUNTING WHICH MAKES ALL HILLS LOOK ALIKE

THE PAVEMENT BREAKING GANG ON THE JOB

steepest of grades and Cincinnati is full of hills.

Public utilities and contractors in general are rapidly recognizing the feasibility of the portable compressor idea. An outfit such as the one described, with its complement of pneumatic tools, eliminates wasted effort. It affords a day-in-and-day-out service unit which makes its owner independent of seasonal changes.

A KANSAS CITY OUTFIT HARD AT WORK

CONVEYOR AND BUCKET LOADERS TEAM UP IN HANDLING AGGREGATES ON PENNSYLVANIA ROAD JOB

Use of Positive Strike-Off Hopper on Loaders Makes Possible Accurate Measurement of Sand and Stone

THE importance of accurately measuring the aggregates which go into a concrete mixer can hardly be overemphasized. Hit or miss methods of measurement are speedily being dispensed with and the various state highway departments are watching contractors on this point to a much greater extent than in the past.

M. J. McMahon of Brooksville, Pa., who has been building concrete roads in Pennsylvania during the season just ended, has been handling his aggregates with Barber-Greene bucket loaders equipped with positive strike-off hoppers which make it possible to measure accurately the aggregates which go into each batch of concrete. This strike-off hopper was developed largely at the request of the Pennsylvania highway officials who considered that the ordinary hopper used in the past on bucket loaders was not accurate enough for state highway work. After the strike-off hoppers had been seen in action they were duly approved by the Pennsylvania Department and this recognition has been followed by approval in Illinois and other states.

The accuracy with which these hoppers operate may be judged by the fact that on one day Mr. McMahon laid 824 ft. of concrete road 18 ft. wide, and at the end of the day his cement checked out to within one bag. During the 1925 road season Mr. McMahon used the bucket loaders on three different jobs and on one of the jobs he used them at two or three different setups.

The two large photographs which accompany this article show the bucket loaders at work near Punxsutawney. At this place Mr. McMahon did the unloading with a Barber-Greene conveyor equipped with a two-cylinder Le Roi engine. This conveyor was 45 ft. in length and had an 18 in. belt. A small track pit was dug into which the cars were dumped and the material was then piled by the conveyor. Both sand and stone were unloaded in this manner and the outfit operated so efficiently that it was possible to unload a car of slag in 30 minutes. The conveyor may be seen in the photograph at the bottom of page 21.

The sand and stone were placed in stock piles by the conveyor and then, as shown in the photographs, were

LOADING SAND AND STONE WITH BUCKET LOADERS EQUIPPED WITH POSITIVE STRIKE-OFF HOPPERS

loaded into trucks by the two bucket loaders each equipped with a strike-off hopper. These hoppers can be so operated that exactly the same amount of material is dropped into the trucks each time. Because of the fact that the height of the drop is uniform for all material which drops from the bucket at a fixed point an average uniform distance into the hopper and the speed of discharge into the hopper is uniform because the bucket speed is uniform, it is possible to control the moisture content of the aggregates to a remarkable extent. This accuracy of control of the aggregates insures the production of more uniform concrete than has been possible by many of the methods used in the past.

With a material yard such as that maintained by Mr. McMahon it is possible to keep the paving operation right at the heels of the concreting work. The pouring can begin as soon as the grading is finished as the conveyor can handle the unloading of the aggregates into stock piles and the bucket loaders can then transfer them to trucks.

Several unloading points can be maintained as the conveyor and bucket loaders can always be moved quickly to points within convenient hauling distances. The conveyor can unload material at one point and before the bucket loaders have picked up the material in the stock piles the conveyor can be sent ahead and begin unloading at a point farther up the line. This is a method Mr. McMahon uses on all his jobs.

STRIKE-OFF HOPPER READY TO DISCHARGE ITS LOAD

GENERAL VIEW OF MATERIAL YARD, SHOWING CONVEYOR USED TO UNLOAD CARS AND BUCKET LOADERS AT WORK LOADING TRUCKS

Another Big Surprise

The LORAIN 75

A YEAR AGO • The Center Drive Truck
NOW • A Complete New Shovel

Mounted on the Center Drive Truck

WHEN, a year ago, we announced the new Center Drive Shovel Truck, many doubted the startling claims made for it. They sounded too good to be true. But—every Thew Shovel delivered in 1925 has proved our claims to be really conservative. The Center Drive Truck has measured up to every one of them—and then some. Ask any Center Drive owner.

Now—we announce an entirely new shovel from the truck up. It is a complete redesign, as revolutionary as the Center Drive Truck was a year ago. It has many startling new features, never used before on any shovel. It's the last word in simplicity, power, speed and ease of control. It's the machine you have always hoped for.

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